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CORRELATING AGRICULTURE WITH THE PUBLIC-SCHOOL SUBJECTS IN THE SOUTHERN STATES.

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PURPOSE OF THE BULLETIN.

The club movement that is taking hold of the young life of our country promises to afford the teacher a most potent means of vitalizing the everyday work of the school. The problems of securing the interest of the pupil in the common-school branches, of teaching in an effective way farm economy, and of gaining the abiding interest of the school patrons seem to have in a large measure their solution in the correlation of agriculture with the common-school branches by means of boys' and girls' clubs. It is the purpose of what follows to suggest some ways and means by which the rural or public-school teacher may utilize clubs in correlating agriculture and farm-life problems with the regular school work.

In setting forth this correlation scheme the public-school classes are divided into two groups, the first group including grades one to five, and the second group including grades six to eight. This division is made for two reasons. In the first place, very few active club members will be found in the first group of grades, and the club influence in correlating the work with them will be largely incidental, while with the second group, in which most of the club membership will be found, the influence should be direct. In the second place, the incentives that stimulate pupils of the ages usually found in the first group are quite different from those that affect the pupils found in the second group. That is to say, pupils below the age of 12 are influenced more by imaginative and cultural stimuli, whereas pupils above that age and usually found in the sixth, seventh, and eighth grades are appealed to more strongly by economic incentives.

Note.—This bulletin is prepared especially for the use of rural school teachers in the Southern States.

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THE PLAN.

The term "correlation" as used in this publication means nothing more nor less than leading pupils into the interpretation of their public-school studies by using things most familiar to them, such as farm, home, and school-life facts and incidents.

It will be observed that the material is arranged according to a monthly sequence plan. Nine months' work is provided for, but in case the school term is not so long, as is generally true in rural schools, the work out of season may be dropped. Any feasible work suggested for months before or after the opening and closing of a school should be undertaken at seasons best suited to the local conditions.

As suggested by the title of this publication, the correlation scheme is intended to be adapted to the southern section of the United States. Covering, as it does, a large territory, the scheme must be of necessity largely suggestive. The details, such as the statement of problems, working of subjects in language exercises, etc., should be left to the teacher. The gathering of local data as the basis of work should be intrusted in a large measure to the club members of the school. This is a point at which the teacher can secure the cooperation and interest not only of the pupils but of the patrons as well. When it is manifested that the school is to use the community problems and facts as the basis of its exercises there will be an awakening in school interest that will probably surprise even the teacher.

HOW THE TEACHER MAY ORGANIZE A CLUB.

As soon as possible after the school opens in the fall the teacher should write the county superintendent and the State agricultural college for all printed matter available pertaining to agricultural clubs. When the teacher has studied the literature and has become familiar with the plans, projects, rules, etc., of clubs, a meeting for organization should be called and should include as many boys and girls of the school district as can be brought together. It would be well to invite the patrons of the school to this meeting and have the farm-demonstration agent for your county give a talk on the agricultural-club movement. If possible, have your county superintendent of education and the woman in charge of girls' canning clubs at this meeting and ask their aid in this organization work. Near the close of the meeting, which should not be too long, a simple form of constitution and set of by-laws may be adopted, and the regular officers of the club elected at this time may include a supervisor, president, vice president, secretary, treasurer, and program committee.

The following general form of organization has been found satisfactory:

Suggested Constitution and By-laws.[1]

CONSTITUTION.

Article I. *Name of club.*—This organization shall be known as ..... School Boys' and Girls' Agricultural Club.

Art. II. *Objects of club.*—The objects of the club shall be to make farm life more attractive and farming more profitable.

Art. III. *Membership.*—Boys and girls from 10 to 18 years of age shall be eligible.

Art. IV. *Officers.*—The officers of this club shall be a supervisor, president, vice president, secretary, and treasurer.

Art. V. *Duties of members.*—Prescribed in the rules for contests, such as follow instructions, attend club meetings, make exhibits at the school and county fair, and keep a report of expenses, income, observations, and work.

Art. VI. *Duties of officers.*—The president shall preside at all meetings; the secretary shall keep the minutes and records of all such meetings; the treasurer must care for all funds collected and shall pay out the same only upon the written order of the president, and the vice president may act as president in the absence or disability of that officer. The teacher shall be supervisor, having the general supervision of all local club work and power of exercising authority in proper management of the club.

Sec. 1. An advisory committee shall arrange for all public contests and exhibits, the procuring and awarding of prizes, and the reporting of statistics and other information to the State organizer.

BY-LAWS.

1. The members of the club shall agree to read all reference literature bearing upon the home project. This may include literature dealing with the growing of corn, cotton, potatoes, tomatoes, chickens, pigs, etc.

2. A written plan of the work of each boy and girl must be prepared for the teacher. They must do all the work connected with the particular contest or project entered upon.

3. The amount of yield by weight and measurement of land and other results of the spring and summer work must be certified to by the contestant and attested by at least one disinterested witness, preferably a member of the local school board.

4. Every member of the club must make an exhibit at the annual school fair.

5. In estimating profits, $5 per acre shall be charged as rent of land. The work of each club member shall be estimated at 10 cents per hour, and the work of each horse at 5 cents per hour. Manure shall be charged at the rate of $1 for each one-horse wagonload and $2 for each two-horse wagonload.

6. No club member will be allowed to receive more than two prizes.

7. The committee of judges for the annual school fair shall be selected by the teacher.

8. Exhibits winning prizes at the school fair should be sent to the annual county contest and even to the State contest.

9. All awards on farm crops shall be based upon the following score:

	Per cent.
(a) Greatest yield per acre	30
(b) Best exhibit	20
(c) Essay and report	20
(d) Best showing of profit on investment	30
Total	100

[1] The teacher should write the State agent in charge of club work at the State agricultural college for suggestions concerning the organization and conducting of a boy's and girls' agricultural club.

PRIZES.

The matter of prizes is of great importance. While the various contests of the club members have for their primary object the assistance of the teacher and the public schools to find an easy approach, educationally, to all the interests of rural and village life and to form a connecting link between parent and teacher, farm, and school, it is found that prizes are necessary to secure the best results. An attempt should be made to offer a large number of prizes. Among the prizes suggested by the Bureau of Plant Industry as suitable awards in club contests, the following may be mentioned:

(1) Free trips and expenses paid to district and State fairs, educational institutions, summer Chautauquas, etc.
(2) Top buggy, saddle, gold watch, automobile, etc.
(3) Clear title to one or more acres of land (to encourage land ownership).
(4) Farm implements, tools, equipment, etc.
(5) Thoroughbred pigs, cattle, horses, mules, pen of chickens.
(6) Club emblems, banners, and pennants.
(7) Manual-training workbench, set of toools, camera, trunk, leather handbag, writing desk, etc.
(8) Poultry equipment, such as incubators, watering and feeding troughs, brooders, fencing, and gates.
(9) Free tuition to short courses in agricultural and mechanical colleges and regular courses in colleges.
(10) Canvas tent, camp outfit, canoe, hunting equipment, baseball suit, and suit of clothes.
(11) Dictionary, encyclopedia, set of agricultural books, special club library, series of books of standard literature.
(12) Subscriptions to farm journals, magazines, and special periodicals for boys.

School credit should be given to every member of the club who carries to completion some one club project. Every boy and girl should be taught the real meaning and value of a prize and that a realization of work well done is the true reward of effort.

HOW TO KEEP UP THE CLUB INTEREST.

The success of the rural school club depends largely upon the cooperation of the rural school teacher, county superintendent of education, farm-demonstration agent, and the State college of agriculture. Shortly after the club is organized in any rural school the teacher should submit the names of the members to the county superintendent of education, who will assist in furnishing the club with literature directing them in the work. The teacher will find it advantageous to have the county demonstration agent make talks before the school, as well as visit the contestants' home projects as he makes his rounds from time to time. The teacher should visit the homes of all club members and, together with the boys and girls and any other members of their families, go to the prize acres, etc., and have the owners tell the methods of preparing the soil, fertilizing, and thus

far cultivating the crop. The results of such a trip will present much material for discussion at club meetings and regular class instruction in agriculture. For every school club there should be a local committee of three men and three women who will encourage the children, interest influential members of the community in the club, and inspect from time to time the work of the club.

THE SCHEME FOR GRADES ONE TO FIVE.

In following the scheme for the first five grades it is suggested that as much practical work as possible be done in nature study and in the school and the home gardens. As many as possible of the facts for the various exercises should be secured from these two sources. If junior agricultural clubs are organized in the school the members should be able to render valuable service in making the correlation work successful.

SEPTEMBER.

LANGUAGE LESSONS.

To develop the conversational powers of the younger children the language-lesson work may be supplemented by engaging them in conversation and putting tactful questions to them concerning the conditions of crops and the home-life problems. These are facts with which the children may readily familiarize themselves and concerning which they will feel free to speak.

Slightly more advanced pupils may be exercised in relating stories concerning the home and the farm. The more advanced pupils of this group should be required to reduce their narratives to writing and unconsciously engage in composition work. Written descriptions of things seen on the monthly excursions to the woods and fields should be required.

READING AND SPELLING.

The following are suggested for supplementary work in reading during this month: The Hay Loft, R. L. Stevenson; Milking Time, Christina Rossetti; September, Helen Hunt Jackson; The Village Blacksmith, Longfellow; The Country Boy's Creed, Edwin O. Grover; Solomon and the Bees, John G. Saxe; The Story of a Leaf, Rebecca Rickoff; and Garden Plants, A. B. Alcott. The adaptation of the foregoing to the different classes must be left to the teacher. Most of these articles will be found in any good system of public-school readers.

The words in the supplementary work for the month having an agricultural bearing should be listed and assigned as lessons from time to time. The difficulty of any assignment should depend upon the advancement of the class. In the supplementary work of this month, for example, will appear such words as follow: Apple, juice, core, tree, leaves, limbs, peanut, ground pea, pindar, goober, vine, nodule, root, drill, seed, grain, potato, eyes, tomato, cotton, square, bloom, tobacco, acre, yield, stalk, fodder, ears, tassel.

DRAWING.

Simple outline work of the various leaves found in the school or home garden, and parts of the plants and the fruit of the same should be done by pupils this month. Drawings of some of the simpler insects found in the garden, orchard, and fields should also be made. Adapting the work to the advancement of the pupils must be left to the judgment of the teacher.

HISTORY.

Have the pupils learn from whatever source available the history of the plat of ground occupied by the school building. In this connection have them give an account of the school buildings that have been used by the school district in the past. Such points as where they were, when built, and by whom should be covered by the account. Have the pupils also collect facts as to the principal school activities of the past, as to the teachers employed, their terms of service; as to the clubs organized, the prizes won, and the names of the winners.

GEOGRAPHY.

Have the smaller pupils prepare a sketch showing the outlines of the school ground, the location of the building, and the principal equipment in the building, the location of the trees, the playground, the school garden, walks, etc. Let the more advanced pupils follow this up with a study of the school district with regard to the location of the different crops grown. The pupils of the fourth and fifth grades should extend this work to the county. Outline maps should be prepared showing the location of the different crops grown and how the growth is affected by the character of soil and its topography. To indicate the crops grown and the location of other agricultural enterprises the outline map of the county should be filled in with seeds, pictures of animals, fruits, etc.

ARITHMETIC.

For the beginners the simple processes of counting, addition, subtraction, etc., should be taught by using the agricultural products of the school garden and the fields, such as apples, peas, small grains, potatoes, etc. Determining the number of peas in a pod, in a pint measure, and estimating the number in a bushel; estimating the number required to plant an acre, either broadcast or in the drill, will give exercises for these processes. Similar exercises may be developed in connection with the other products mentioned. Exercises for more advanced pupils may be secured on excursions to the fields by taking measurements and counting the number of plants within the area taken and, with this as a basis, determining the number of plants per acre. By counting the number of ears of corn, bolls of cotton, fruits, or seeds of other crops within the area taken, the yield per acre may be estimated and the size and value of the crop determined. Such exercises may be multiplied almost indefinitely.

EXCURSIONS AND PRACTICAL WORK.

Weekly excursions with the pupils should be made to near-by fields, orchards, and forests with a view of gathering facts for the language and arithmetic exercises and making observations for the geography work.

Practical work in gathering school-garden products and caring for the fall crops should be done. Collecting, grouping, and mounting helpful and harmful insects should be engaged in.[1]

OCTOBER.

LANGUAGE LESSONS.

Conversations with younger pupils about the progress being made on the farms in harvesting crops should provide supplementary work for them. Brief written statements concerning their observations at home should be required. Of pupils of more advanced classes, narrations concerning their observations in connection with methods employed in harvesting should be required. After the stories have been related orally in class the pupils should be required to reduce them to writing. The more advanced pupils should write stories and descriptions concerning observations on excursions.

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[1] See U. S. Dept. Agr., Farmers' Bul. 606.

READING AND SPELLING.

The following are suggested for supplementary work in reading during this month: The Kitten and the Falling Leaves, Wordsworth; Evening at the Farm, J. T. Trowbridge; The Corn Song, Whittier; That Calf, Alice Cary; Autumn Leaves, George Cooper; Autumn, Edmund Spencer; Farmyard Song, J. T. Trowbridge, and Harvest Song, James Montgomery.

List and assign the new words bearing on agriculture found in the correlating exercises of this month. The following are suggested as examples of words that will appear: Variety, crib, soil, plat, test, report, visit, fair, pumpkin, exhibit.

DRAWING.

The following are suggested for outline work in drawing: Ears of corn, grains of corn, open cotton boll, pumpkins, potatoes, and other field and garden products in season.

HISTORY.

Have each pupil, sufficiently advanced to do so, prepare a history of his homestead or place at which he resides, dating back as far as reliable information may be had. Special mention should be made of the farm improvement, the character of the crops grown and with what success, and the connection the home and the people have had with the agricultural and school development of the community.

GEOGRAPHY.

Have the younger pupils prepare an outline of the farmstead showing location of the house, outbuildings, garden, and orchard. Require them to use seeds and pictures to indicate the location of the permanent objects on the farm and to indicate the farm products and animals grown.

Have the older pupils study the yields of the crops of the community as affected by elevation and character of soil. Let it be shown in each case where there are striking examples of good or poor yields whether it is due to the elevation or to the character of the soil.

Require the more advanced pupils of this group to plat a 5-acre piece of ground, locating the trees, streams, hills and hollows, houses, if any, crops grown, relative yields, and the different kinds of soil.

ARITHMETIC.

For the simpler processes with the younger pupils use shelled peanuts, finding the number of peas in a pod of each variety, the number in a pint, and estimate the number required to plant given areas. Determine the number of rows of grain on an ear of corn, the number of grains in a row, and the whole number of grains on the ear. By using specimens of different varieties these exercises may be multiplied to meet the needs of the work. Similar processes with cotton seed and other garden and field crops may be developed. For more advanced pupils simple processes in the cost of material for farm buildings may be used.

EXCURSIONS AND PRACTICAL WORK.

Weekly trips to near-by fields for the purpose of observing methods of harvesting crops and seed selection should be made. In most sections of the South October is the month for county fairs. By all means let the teacher spend at least one day with his pupils at the fair for the purpose of studying the exhibits and taking notes. The agricultural exhibits at the fair should prove a source of splendid material for correlation exercises.

Seasonable work in the school or home garden should constitute the practical work of the month.

NOVEMBER.

LANGUAGE LESSONS.

The farm stock, poultry, and implements, the roads to school, to church, and to the local market should provide material for conversation for the younger pupils. For the slightly more advanced pupils oral and written narrations on the foregoing subjects should be required. For the still more advanced pupils written descriptions of different breeds of poultry and stock and the farm implements should constitute the work. The condition of the roads to the county courthouse and to the principal county market should also provide material for written work.

READING AND SPELLING.

The following are suggested for supplementary work in reading for this month: November, Alice Cary; How the Leaves Come Down, Susan Coolidge; The Flight of the Birds, E. C. Stedman; Hunting Song, Coleridge; Cotton, Zitella Cocke; The Farmers' Gold, Edward Everett; Indian Corn, Edward Eggleston; and To a Mouse, Robert Burns.

List and assign the new words that appear in the correlation work of this month. Among these should be found such as follow: Poultry, chicken, duck, goose, turkey, egg, feathers, color, horse, swine, sheep, breed, calf, roads, market, produce, progress.

DRAWING.

Drawing for this month should consist of outlines of eggs, different kinds of poultry, farm animals, simple farm implements, split-log drag, etc.

HISTORY.

A history of marketing the community crops should be prepared consisting of such items as the following: Places at which sold, prices obtained, manner of transporting, condition of roads, cost of marketing, etc. For the more advanced pupils of this group a history of the methods of county road working, past and present road laws, should be studied. The extent to which the growing of crops in the different parts of the county has been affected by roads should be studied. A comparison of the home county with adjoining counties where conditions are better or worse should be made.

GEOGRAPHY.

A study of the effect of elevation on the maturing of crops should be made in the school district and in the adjoining districts. The excursions for this month should be made to include observations of fields of different elevations to note the effect. A study should be made also of the influence of elevation on the kinds of crops that the community is able to grow. This study should be extended through the county and to the adjoining counties for the benefit of the more advanced pupils.

ARITHMETIC.

A profitable exercise for beginners is to have them count the number of farm implements, stock, poultry, and things of like character at their homes and report the same to the teacher in class. By finding totals of each variety or class and of all farm animals and implements many exercises may be developed. For the more advanced pupils problems as to the cost of marketing crops on good and bad roads, taking into account the time, the size of the loads, and the life of wagons should be developed. Problems on the effect of good and bad roads on the price of land should be made. As a basis for these exercises values in different communities where roads are good or bad should be taken into consideration. It would be well during this month to develop problems on the cost of planting fruit trees and the value of their yields.

EXCURSIONS AND PRACTICAL WORK.

The excursions for the month will be determined more or less by the correlation needs. Special attention should be given however to visiting farms of the community having improved breeds of poultry and swine. Where possible, excursions should be made to farms equipped with modern implements, and the names and uses of these implements learned. If there is no farm in the community affording this opportunity, a visit to an extensive hardware concern for this purpose should be made. Farm-supply catalogues should be ordered, and the names of farm implements and their uses learned.

Seasonable work in the school garden should be done. Cuttings of shrubbery and fruits should be made and stored during this month.

DECEMBER.

LANGUAGE LESSONS.

For the younger pupils conversations on corn and its uses, cottonseed and its by-products and uses, peanuts, peas, and the small grains and their uses should be engaged in. Oral and written narrations on visits to old-fashioned gins, water mills, and other out-of-date machinery should be required of the more advanced pupils. Written descriptions of old-fashioned looms, spinning wheels, mowing blades, etc., compared with the modern machinery substituted for them should also be required.

READING AND SPELLING.

The following selections are suggested for supplementary work this month: The First Snow Fall, Lowell; and The Origin of Roast Pig, Charles Lamb. For the younger pupils there are a number of interesting Mother Goose rhymes relating to agricultural subjects that may be used.

List and assign the new agricultural terms found in the correlation work as spelling exercises for this month. As examples of words that will appear the following are submitted: Starch, meal, bread, flakes, oil, gin, wheel, machine.

DRAWING.

During this month it will be profitable to engage the pupils in drawing all kinds of farm-crop seed and weed seeds and learning to recognize them at sight. It will be interesting to introduce colored crayons at this time to give each seed as nearly as possible its shade of color.

HISTORY.

It is suggested that during this month the history of the methods of planting, cultivating, harvesting, and marketing of the ordinary crops be studied. This study should tend to bring out the improvement that has been made in the various methods.

GEOGRAPHY.

During this month the study in geography should relate to the crops that are kept on the farm and those that are sold, the agricultural products that are bought by the community and the crops exchanged for them. The reason for the exchange of these crops should be noted, and the loss or gain to the community by the same. The means of exchanging crops should be studied, such as the manner of transportation and the commercial concerns engaged in buying and selling.

ARITHMETIC.

For the younger pupils exercises in determining the number of eggs, pounds of butter, and gallons of milk produced at each home in the community and the value of the same during each week in December should be developed. For the more

advanced pupils problems involving the following items of farm management should be developed and assigned: Harvesting, preparing for market, the cost of marketing, the cost of feeding poultry flocks, the cost of feeding dairy cows, the value of their products, and the per cent profit or loss.

EXCURSIONS AND PRACTICAL WORK.

Excursions should be made with a view of making comparison of old and out-of-date and new farm machinery, gins, grain mills, etc.

During the month of December indoor exercises in studying and learning to identify seeds of plants and weeds, and learning to distinguish between good and bad seeds should be practised.

JANUARY.

LANGUAGE LESSONS.

Conversations concerning the uses of fertilizers, the quantity required, and for what crops, should be engaged in with the younger pupils. Oral and written accounts of visits to fertilizer plants, methods for distributing fertilizers, and methods of mixing should be required of the more advanced pupils of the group. Descriptions of fertilizer distributors, fertilizer mixing boxes, and the different brands of fertilizers should constitute work for the still more advanced pupils of this group.

READING AND SPELLING.

The following selections are suggested as supplementary work for this month: Winter Time, R. L. Stevenson; The Snowdrop, Tennyson; The Frost Spirit, Whittier; and Snowbound, Whittier.

List and assign words found in the correlation exercises of this month adapted to the use of the several classes. Among this number should be found such as follows: Sacks, brand, potash, acid, nitrogen, mixed, material, fertilizer, community, distributor, commercial, elements, manufacture, formula, problem, profit.

DRAWING.

The drawing work of the month should consist of outlines of fertilizer sacks, fertilizer horns, fertilizer mixing boxes, tools employed in home mixing of fertilizer, and sketches of more improved fertilizer distributors.

HISTORY.

Study the history of the use of commercial fertilizers in the community and county, noting the principal brands and formulas that have been used and in connection with what crops. Let special attention be given to the effect that the use of fertilizers has had upon the agricultural development of the community, noting the crops grown previous to the use of fertilizers and those grown since their use. Also study the effect of fertilizers on the yield of crops. The development of the industry of manufacturing fertilizers in the community, county, and State should be studied, and in connection with this the history of the prices and the conditions that have affected prices.

GEOGRAPHY.

Study the leguminous crops that can be grown in the community successfully, noting the locality and the conditions obtaining. Extend this study to the county, noting where the leguminous crops are grown and not grown and the reason. Locate the fertilizer plants in the community, county, and State, and assign reasons for the particular location. What and where are the raw fertilizer materials found in the community, county, and State? What crops are exchanged for fertilizers, and is the exchange made at a profit or loss?

ARITHMETIC.

Have the younger pupils count the number of sacks of fertilizer used at home and report this to the teacher. Let the total number of sacks be determined, the total number of pounds for each farm, for the community, and find the average number of pounds used per acre for each farm and for the entire community. Multiply this work to include the cost per acre, per farm, and for the community. For the more advanced pupils develop simple problems on the cost of fertilizing elements taken from the soil by each crop. Prepare statements of problems involving the replacing of fertilizing elements by leguminous and other cover crops and by the use of mold. Problems involving the cost of the elements in various fertilizers as determined by their formulas should be developed.

EXCURSIONS AND PRACTICAL WORK.

Visits to fertilizer plants, warehouses, etc., for the purpose of observing the mixing processes and of securing the names of the different brands, their formulas, and special uses, should be made. The necessary data for the other correlation exercises should be secured on these trips.

During this month the school grounds should be laid out and the year's work planned. The plats of the individual pupils in the school and home gardens should be laid out and located during this month. Making stakes and other devices to be

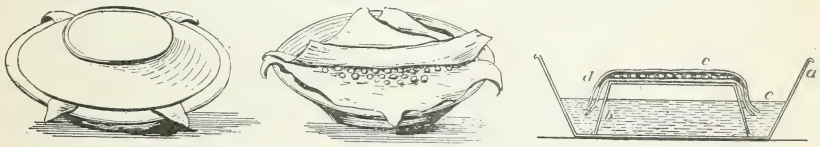

FIG. 1.—Simple seed-germinating devices.

used in the school and home gardens should constitute some of the practical work of the month.

FEBRUARY.

LANGUAGE LESSONS.

Conversations on the need, value, and methods of seed testing should be engaged in. For the slightly more advanced pupils oral and written narrations of the steps in making a seed-testing box should be required. Written descriptions of seed-testing boxes should be assigned as work for the still more advanced pupils. Conversations and oral and written statements concerning the value of sprays, the materials used, the steps in mixing, and the devices used, should be given. Descriptions of methods of pruning and grafting should constitute work for the advanced pupils of this group.

READING AND SPELLING.

The following selections are suggested for this month: The Oak Tree, Mary Howett; The Voice of the Grass, Sarah Boyle; The Planting of the Apple Tree, Bryant; Woodman Spare That Tree, G. P. Morris; The Parable of the Sower, The Bible; How to Plant a Tree, Julia E. Rogers; and Plant a Tree, Lucy Larcom.

Such words as the following will appear in the correlating exercises of the month: Seed, testing, checks, production, germination, diseases, insects, spraying, pruning, grafting, scion, stock, vigorous, tongue, cleft, budding, helpful, harmful.

DRAWING.

Make drawings of different kinds of seed testers (fig. 1), of germinating grains, both weak and vigorous, of diseased parts of plants showing affected parts, of proper and improper cuts in pruning, of different methods of grafting.

HISTORY.

The history of the practice of testing seed in the community and county showing the different methods employed, and the effect in crop production should be studied. A study of the different fruit crops of the community and county as to their introduction, success or failure, and why, should be made. The history of plant diseases and insects, showing how and when introduced and the successful and unsuccessful methods of combating them should constitute part of the correlation work of the month.

GEOGRAPHY.

The correlation work in geography for the month should consist in naming and locating the farmers of the community and county that have practiced seed testing. Name and locate the plant diseases that obtain in the community and county, setting forth the conditions favorable and unfavorable to the propagation of the same and the effect that the appearance of these diseases and insects have had upon the agricultural interests. What conditions of climate, altitude, and soil obtain favorable and unfavorable to fruit growing.

ARITHMETIC.

For the younger pupils work may be assigned involving the determining of the number of checks in seed testers, the cost in time and material of making them, and the value of the time spent in testing seed. For more advanced pupils problems should be developed involving the value of testing seed, the value of the time spent in such work, and the loss that would be sustained in poor stands by failure to do it properly. These processes may be multiplied to include as many principles of arithmetic as desired. Problems involving the cost of spraying mixtures, and the time employed in their application should be developed. The work should be extended to the saving in fruit crops and the value of the time and means expended in this way. Let your problems be based as nearly as possible upon local experiences.

EXCURSIONS AND PRACTICAL WORK.

Excursions should be made this month for the purpose of observing diseased orchards and learning to distinguish the different diseases affecting the plants of the same. Specimens of diseased plants and vegetables should be brought from the homes of the community for study in the school. Special attention should be given to the seeds that are to be planted in the school garden. As a matter of precaution all seeds should be subjected to preventive treatment in order that the school or home garden may not become infested with diseases.

The practical work of the month should consist of testing the vitality of seeds to be planted in the garden, pruning of school or home ground shrubbery, preparing ground, and planting early vegetables.

MARCH.

LANGUAGE LESSONS.

Have the younger pupils engage in conversation and prepare short written statements concerning the kinds of birds, their habits and their means of subsistence. Oral and written statements should be required of the more advanced pupils concerning the habits of birds, their means of subsistence, and migrations. These stories should be based on observations made on the school grounds and during excursions made to the fields and woods. Written descriptions of nests and their locations should be required of the more advanced pupils. Reasons should be sought and assigned for the nesting habits of different birds.

READING AND SPELLING.

The following are suggested as supplementary selections for the month: Little Birdie, Tennyson; Daisies, T. D. Sherman; Robin Redbreast, William Allingham; The Barefoot Boy, Whittier; Mary Emily's Chickens, L. N. Duncan; The Lamb, William Blake; The School Garden at Plumfield, Louisa M. Alcott; and The Botany Lesson, Rebecca Rickoff.

List and assign the new words of an agricultural bearing appearing in the correlation work of this month. Examples: Bird, nest, flock, migration, local, value, location, destroy, native, rodents, pests, insects, materials, garden, habit, domestic, prevalent, subsistence, stake, preparation, planting, practical.

DRAWING.

Simple outline work of birds, fowls, and different kinds of nests should constitute the drawing work of the month. In case of more advanced pupils, some color work with crayon might be required to give touches of reality to the sketches.

HISTORY.

Study the history of the birds prevalent in your community and section. This history should cover the origin, introduction (in case any of the birds are not native), and their relation to agriculture. Special attention should be given to the relation of the different kinds of birds to historical events, art, song, and story.

GEOGRAPHY.

Study the migration of local birds. Learn the conditions of climate and food supply at the places to which they go. Compare these with local conditions of the different seasons. Compare the habits and uses of migrating and nonmigrating birds, as to their methods of subsistence. Study the habits of nesting as to locality and assign reasons for the selection of different places by the different kinds of birds.

ARITHMETIC.

For the younger pupils, develop problems on the number and quantity of the different kinds of seeds, such as onions, potatoes, corn, beans, peas, etc., required to plant a given area. For the slightly more advanced pupils, a record of the time spent in working plats in the school or home garden should be kept and problems developed on the value of the time. For still more advanced pupils, problems on the cost of materials used in the home and school gardens, such as stakes, fertilizers, and seed, should be developed.

EXCURSIONS AND PRACTICAL WORK.

During this month, excursions should be made to the forests to observe the birds, to learn their names, their songs, their habits of nesting, means of subsistence, and other peculiarities. The same studies should be made with reference to the undomesticated animals, rodents, and insects prevalent in the community. This work should be extended through the months of March, April, and May.

Making hotbeds, germinating plants, preparing ground, and planting plats in the home and school gardens should constitute the practical work of the month.

APRIL AND MAY.

LANGUAGE LESSONS.

For the younger pupils, conversation practice and brief narrations, oral and written, concerning the school-garden experiences and insect, animal, and bird habits should be engaged in. For more advanced pupils, oral and written exercises concerning the

preparation of seed beds, planting, fertilization, and cultivation should be required. The written work should be extended to descriptions of plants in process of germination and in different stages of growth. Oral and written stories on the rounds of economic insect life, the means of subsistence in each stage of existence, and the methods of combating insects in each stage of existence should constitute part of the written work for the month.

READING AND SPELLING.

The following are suggested for supplementary exercises: The Cow, R. L. Stevenson; The Little Plant, Kate Brown; Come Little Leaves, George Cooper; The Busy Bee, Isaac Watts; Little Cock Sparrow; The Bee and the Flowers, Tennyson; To a Butterfly, Wordsworth; The Gladness of Nature, Bryant; The Owl, Tennyson; The Song of the Brook, Tennyson; The Pet Lamb, Wordsworth; Sweet Peas, Keats; and To a Mountain Daisy, Robert Burns.

The new words and terms appearing in the correlation exercises of April and May should be listed and assigned as lessons from time to time. Examples, plantlet, leaves, roots, flowers, simple, stage, existence, elevation, drainage, excursion, combating, forests, germination, absorption, growth, implements, developed, common.

DRAWING.

The drawings of these months should consist of outlines and sketches of germinating seeds, plantlets, leaves, roots, flowers, and parts of flowers from the gardens, fields, and forests. Drawings of devices and simple implements used in the school garden should be made. Drawings of the insects found in the gardens, the home orchards, and the fields should also be made. Insects having a well-defined round of life should be studied with a view of making drawings of each stage of existence.

HISTORY.

The history of the most common garden plants covering the following points should be studied: Where native, by whom domesticated, or in case of varieties, by whom developed, and when and under what circumstances introduced into the community or section.

The life history of the prevalent insects, both beneficial and harmful, should be studied, giving special attention to when, where, and how they exist in each stage of the round of life; when, where, and how introduced into the community.

GEOGRAPHY.

The time of planting garden plants as affected by climate, elevation, and drainage in the community and in the local school garden should provide interesting work in the subject these months. Market gardening with a community bearing should be studied, noting especially the crops that can be successfully grown, the means of distribution, and the places of marketing. Such questions as follow should be answered: What garden products does your community buy, and why? Where were they raised, and what conditions obtained? What effect has the Girls' Canning and Poultry Club had upon the production of these products in your community? What effect have insects, fungus diseases, and birds upon the time of planting, the manner of cultivation, and the general treatment of garden crops?

ARITHMETIC.

Problems should be developed on the value of birds to the farmer in the number of weed seeds and insects destroyed by each individual bird in the course of a year. Estimates of the harm done by birds, rodents, vermin, insects, and small animals should provide material for exercises in arithmetic.

EXCURSIONS AND PRACTICAL WORK.

Excursions for the purpose of studying birds, animals, and insects should be continued. It would be well to make excursions to gardens, orchards, or fields where methods of combating harmful species of any of the foregoing are being employed.

Practical work for these months will consist almost entirely of caring for the garden plats of the pupils (fig. 2).

THE SCHEME FOR GRADES SIX TO EIGHT.

While the following suggestive scheme is prepared for all the pupils of these grades, yet the success with which these exercises may be correlated with the other school work will depend to a great extent upon the cooperation of the club members of the school. The importance of club membership should be emphasized by the teacher in every way possible, especially by calling upon the members to assist in this work and by making the problems of the clubs the problems of the school.

FIG. 2.—Harlem, Ill., consolidated school garden.

SEPTEMBER.

LANGUAGE LESSONS.

Written reports of field observations. Compositions on selection of seed in the field: Corn, cotton, tomatoes, potatoes, tobacco, cane, peanuts, etc. Make records of practical work. Letter writing: Write letters ordering seed catalogues, asking for the quotation of prices on seed, requesting publishers to contribute farm papers for school libraries, asking friends and others to contribute books on agricultural subjects for school libraries.

READING AND SPELLING.

The following are suggested for supplementary correlation reading: Bureau of Entomology Circular No. 6, The Mexican Cotton-Boll Weevil; Bureau of Animal Industry Circular No. 208, Organization of Girls' Poultry Clubs; Bureau of Entomology Circular No. 4 (2d ser.), The Army Worm; Farmers' Bulletins Nos. 198, Strawberries; 290, The Cotton-Boll Worm; 303, Corn-Harvesting Machinery; 408, School Exercises in Plant Production; 415, Seed Corn; and 478, How to Prevent Typhoid Fever.

List and assign new words related to agriculture for spelling exercises.

DRAWING.

Make drawings of ideal and faulty specimens of various farm plants such as corn, cotton, sugar cane, tobacco, tomatoes, etc. Collect, name, and make drawings of weeds and helpful and harmful insects active at this season.

HISTORY.

During the month of September, or the opening month of school, considerable time should be spent in organizing the school clubs, studying parliamentary practice, familiarizing club members with rules governing contests, planning exhibits for the county fair or school fair, practicing club members in making out reports of yields, and planning and preparing the agricultural notebooks to be used by the pupils in keeping records of the ensuing year.

GEOGRAPHY.

Have each pupil prepare an outline map of the State and fill in with seeds, fibers, and pictures, showing by these the agricultural products of the State and their location as affected by climate. Extend this study to the other States and show by comparison of the agricultural products in what respects the climate is the same, and in what respects the climate is different from the local State. Follow this up with a study of the agricultural products of other countries for the purpose of determining those that have the same climatic conditions and those that differ.

ARITHMETIC.

Develop problems from measurements made of fields of given crops and especially club acres and plats. Count stalks, ears, bolls, etc., and with these as a basis develop exercises on yields, values of crops, etc. From data gathered in the community, develop exercises on the comparative cost of farm buildings to farm lands. Problems in making out bills of lumber for pigpens, poultry houses, dairy barns, cribs, silos, etc., and finding cost of same may be made use of. As nearly as possible, use local material as a basis for exercises. Have the club girls furnish recipes of various dishes to be used as a basis for calculation on the cost of materials involved.

EXCURSIONS AND PRACTICAL WORK.

Weekly excursions should be made to near-by fields, or, better still, to the patches of club members (fig. 3) to study types of stalks and to make field selections of seeds. The stalks selected should be indicated by some kind of marking, so that they may be detected easily when seeds are matured and ready for gathering. Before going on these excursions publications pertaining to seed selection should be carefully read. It would be wise to take the publications for reference on these excursions.

Practical work in preparing equipment for storing seeds and arranging exhibit material for the school or county fair should be done in this month.

OCTOBER.

LANGUAGE LESSONS.

Reports of field observations. Compositions on modern methods of harvesting and modern methods of preparing leading crops for market. Descriptions of observations made at the school or county fair should be required. Letters to commercial people asking for prices and offering products for sale should be written. Make a record of practical work.

READING AND SPELLING.

The following are suggested for correlation reading: Farmers' Bulletins Nos. 113, Harvesting and Storing Corn; 258, Texas or Tick Fever and Its Prevention; 292,

FIG. 3.—School children visiting a club member's acre of corn, Elbert County Ga.

Cost of Filling Silos; 354, Onion Culture; 408, School Exercises in Plant Production; 436, Winter Oats for the South; 548, Storing and Marketing Sweet Potatoes; 617, School Lessons on Corn; and Bureau of Plant Industry Document No. 485, The Selection of Cotton and Corn Seed for Southern Farms.

List and assign the new words for spelling exercises.

DRAWING.

Prepare outline plans of poultry and hog houses, cribs, silos, and dairy barns. Make drawings of the less complicated harvesting machinery and the important parts of the same. In this connection emphasize the learning of the names and uses of implements and their parts.

HISTORY.

Study the history of crops of the community as to their origin, time, and circumstances of their introduction, and the success with which they have been grown. Also study the history of weeds, insects, and fungus diseases of the section as to origin, introduction, spread, damage done, and methods of combating.

GEOGRAPHY.

Study the topography of the State with reference to the effect that elevation has upon agricultural industry. Prepare outline maps to illustrate. Extend this study to other States and countries and note the effect of elevation, as compared with latitude, on crops, locating those sections that have similar products as a result of similar altitude or latitude.

ARITHMETIC.

Develop exercises on the capacity of bins, cribs, hay barns, silos, wagon beds, etc.; also on cost of harvesting crops, such as corn, cotton, cane, fruits, peanuts, potatoes, and on the cost of preparing salable crops for market. Let all exercises be based on local conditions and facts. These data should be collected by the club members of the school. During this month problems involving the annual reports of club members should be developed. The exercises should be so prepared as to involve as many of the principles of arithmetic as necessary.

EXCURSIONS AND PRACTICAL WORK.

Select seed from near-by fields and club plats from plants previously marked on the excursions. This is the month for fairs, and the pupils should visit these, observe exhibits, and collect facts for correlation exercises.

Practice in storing seed in previously prepared devices should be given. Let the economic importance of this work be emphasized. During this month pupils should get valuable training and practice in judging crops and animals. Let the school authorities insist on the officers of the fair association furnishing specialists for this purpose during fair week. The training and experience in scoring and judging of this week can be followed up by the teachers and pupils during the following months.

NOVEMBER.

LANGUAGE LESSONS.

Reports of field observations. Compositions on crop marketing, crop storing, and the feeding of crops. Written descriptions of bins, cribs, silos, and hay barns, modern in character, should be required. Make records of practical work. A description of the school's exhibit by the club members at the county or school fair with a record of the results obtained in the way of prizes, etc., should be made. Practice in letter writing should be had by applying to the Department of Agriculture for the necessary publications for the succeeding months' correlation exercises.

READING AND SPELLING.

The following are suggested for correlation reading: Farmers' Bulletins Nos. 298, Food Value of Corn and Corn Products; 379, Hog Cholera; 408, School Exercises in Plant Production; 438, Hog Houses; and 537, How to Grow an Acre of Corn.

List and assign the new words for spelling exercises.

DRAWING.

Prepare drawings of farm tools used in breaking and cultivating land, in fertilizing crops, and in general cultivation. When the implements are too complicated, make drawings of only the most essential parts. Keep in mind that the purpose is to teach the pupils the names and uses of implements and parts of implements.

HISTORY.

Study the history of the methods of preparation, cultivation, and harvesting of the various crops of your State and section that have obtained in the past and note the development. Compare these with methods employed in other sections and countries having similar products. Study the history of farm implements, noting the development, the saving of time and labor, and the increased efficiency.

GEOGRAPHY.

Study the time of planting crops, the maturing of crops, and the manner of housing crops and animals as affected by the elevation and latitude of your own State. Extend this study to a comparison of the same with other States and countries having similar agricultural productions.

ARITHMETIC.

Problems should be developed on the cost of liming land, turning land at different depths, on the economy in the use of improved machinery in turning land, on the crop yields for your county, State, and section, on facts gathered as to the farm products bought and sold by the State and country. Let problems be developed involving the value of farm products bought and sold by the home county and lessons deduced as to the status of your county in a financial way. Answer these questions: Do you produce more than you buy? Do you buy what you should produce? From records of pig-club members compare the relative value of scrub and pure-bred hogs. From records of poultry-club members develop problems on the production of the different breeds of poultry.

EXCURSIONS AND PRACTICAL WORK.

Excursions should be made to the farms of the community to study poultry, swine, horses, cattle, and sheep, for the purpose of practice in scoring (fig. 4) and to secure data for correlation exercises. On these visits to the farms implements should be observed to learn their names and uses. If there are any particular farmers who have new or specially improved implements for fall and winter plowing, visits should be made to observe these and to note their efficiency in use.

DECEMBER.

LANGUAGE LESSONS.

Reports of field observations. Prepare score cards for exercises of this kind in field crops. Compositions on value of improved farming implements, especially those that are adapted to your section, should be required. Compositions on the care of farm implements should also be required. Letters ordering farm-implement catalogues and bills of implements should be written. Copy records of practical work.

READING AND SPELLING.

Farmers' Bulletins Nos. 51 (Rev.), Standard Varieties of Chickens; 270, Modern Conveniences for the Farm; 321, The Use of the Split-Log Drag on Earth Roads; 408, School Exercises in Plant Production; 413, The Care of Milk and Its Use in the Home; and 541, Farm Buttermaking.

List and assign new agricultural terms for spelling exercises.

DRAWING.

Lay out school grounds and plat to a scale, showing the walks, flower yard, garden, clumps of shrubbery, trees, buildings, etc. Plat the school and home gardens to scale, showing walks and individual plats.

HISTORY.

Study the introduction and development of the use of fertilizer in the State and section, noting its effect on the agricultural development, the study that has been made to use it intelligently, the laws that have been passed relating to the fertilizer industry, and to what extent the use of fertilizers has proved beneficial.

FIG. 4.—A lesson on the beef type.

Study the organizations and functions of the State and national departments of agriculture and note in what particular way these departments have been helpful to your State.

GEOGRAPHY.

Study the trade that results from the exchange of agricultural products between your State and the other States and countries. Compare the exports and imports as to quantity, value, and character. Learn the means by which each home-produced article reaches the ultimate consumer. Extend this study to the trade relations of your section of the country with the other sections and with the other parts of the world. In this connection prepare maps showing lines of commerce and locate the principal receiving and distributing points for each agricultural product bought or sold.

ARITHMETIC.

Develop problems on the cost of keeping cows in the different homes of the community. Have pupils bring data as to the rations fed daily to the cows and from such determine the nutritive value and let it be shown whether the ration is balanced or not. Where the Babcock tester can be had let the milk of the various cows of the community be tested and from these facts develop problems showing the profitableness or unprofitableness of the individual cow, and by a comparison of the kind and cost of rations and returns from each cow let it be shown whether the profit or loss is due to the feeding or to the animal. Special problems in nutritive ratios should be developed for the benefit of the pig and poultry club members. This entire month can be spent in working out balanced food rations for the various farm animals of the community, combining foodstuffs in these rations that can be had

FIG. 5.—Fathers observing a corn-judging contest, New Martinsville, W. Va.

at the least cost. As a basis for these exercises the following publications are suggested for use: Farmers' Bulletins 22 (Rev.), Feeding Farm Animals; 346, The Computation of Rations for Farm Animals by Use of Energy Values; and 411, Feeding Hogs in the South.

EXCURSIONS AND PRACTICAL WORK.

Excursions for comparison of out-of-date and modern farm machinery, gins, and grain mills should be made. Trips should also be made for the purpose of practice in scoring farm animals.

Practical indoor work in scoring seeds should be engaged in during the months of December and January (fig. 5). Have specimens brought to the school by club members and the work carried on under the supervision of the teachers. When possible, have farmers bring animals to the school grounds for practice in scoring.

JANUARY.

LANGUAGE LESSONS.

Reports of field observations. Prepare systems of crop rotation adapted to your section. Write description of seed testers and methods of testing the vitality of seeds. Letters ordering material for seed testers and garden stakes or submitting bills of material should be written.

READING AND SPELLING.

The following are suggested for correlation work in reading this month: Farmers' Bulletins Nos. 185, Beautifying the Home Grounds; 213, Raspberries; 347, Repair of Farm Equipment; 375, Care of Food in the Home; 389, Bread and Bread Making; 408, School Exercises in Plant Production; 468, Forestry in Nature Study; 511, Farm Bookkeeping; and 538 and 539, On Citrus Growing in the Gulf States.

List and assign the new words and terms of an agricultural character appearing in the correlation exercises of the month.

DRAWING.

Have each pupil lay out his plat in the school garden and show in the diagram the location of each vegetable to be planted, indicating the rows or beds by name. Require drawings of all garden devices, such as stakes, tools, etc. During this month seed-testing boxes or cases should be planned and drawings made to a scale.

HISTORY.

Study the relationship of the agricultural products of the State and section to the political history of the State and country. Let this study begin with the settlement of the country and extend to the present. Emphasize the importance of the relationship by connecting particular crops with striking historical events and legislative enactment.

GEOGRAPHY.

Study and compare the forms of government, the prevailing customs, the religions, the classes of people and their personal characteristics in the different parts of your own State, in other States, and in other countries having agricultural industries similar to that of your own State and section.

ARITHMETIC.

At the beginning of the new year the older pupils, and especially the club members, should he encouraged to open books for the purpose of keeping accounts of the outlay and income of the farms of the community. Separate pages should be set apart for each farm crop and enterprise, providing both credit and debit columns. Each domestic animal should be assigned a page with credit and debit columns. If it is not an animal that labors or supplies some product for immediate consumption, and is not disposed of during the year, its credit column should show the increase in weight or value at the market price. Club members should open books and keep accurate records of their enterprises for the year.

Practice problems in determining the value of elements in fertilizers of given formulas, in the cost of compounding fertilizers of given formulas, and in determining the value of the time consumed in compounding fertilizers, should be developed. Data for the foregoing should be secured by visiting local warehouses or farms and examining the formulas found on the sacks of the various brands. Compare the cost of the home-mixed products with that of the commercial brands of the same formulas and note the saving, if any, by home mixing. Practice pupils in interpreting the formulas on fertilizer sacks.

EXCURSIONS AND PRACTICAL WORK.

The excursions for this month should be made for the purpose of securing data for the exercises mentioned in the other subjects.

The pupils of this group of classes should do practical work in compounding fertilizers for their contest plats, and to get as much practice as possible they should go in groups from one boy's home to another's to assist in compounding the fertilizers. The fertilizers to be used in the school garden should be compounded by the club members in the presence of the entire school and for its benefit.

All seed-testing devices should be prepared this month, and the seed to be tested assembled for the purpose.

FEBRUARY.

LANGUAGE LESSONS.

Compositions on the value of seed testing should be required. A most valuable exercise for the advanced pupils and club members would be to collect, classify, and record the agricultural statistics of the school district. Let this show what was produced the previous year, what kept on the farm, what sold, and what bought. This will not only give valuable practice in systematic work but will furnish the school and community with valuable information as to its agricultural status.

READING AND SPELLING.

The following are suggested for supplementary reading: Farmers' Bulletins Nos. 134, Tree Planting on School Grounds; 181, Pruning; 218, School Gardens; 236, Incubation and Incubators; 243, Fungicides and Their Use in Preventing Diseases of Fruits; 255, The Home Vegetable Garden; 389, Bread and Bread Making; 428, Testing Farm Seeds in the Home and in the Schools; 491, The Profitable Management of the Small Orchard on the General Farm; Bureau of Entomology Circular No. 54, Peach Tree Borer; and Bureau of Plant Industry Yearbook Reprint No. 197, How Birds Affect Orchards.

List and assign the new words as spelling lessons.

DRAWING.

Require pupils to bring to school specimens of all kinds of domestic plants affected by fungus diseases and make drawings of these, showing the appearance of the affected part. Require drawings of cuttings, proper and improper pruning (fig. 6), methods of grafting, pruning and grafting implements; also drawings of spraying devices. In connection with all these emphasize learning the names and the uses.

HISTORY.

Study the origin and development of the school-gardening movement, noting especially the purposes, the results that have been obtained, and its future possibilities in advancing the interests of the community, both as to vitalizing the school work and as a source of revenue for school enterprises.

GEOGRAPHY.

Study the relationship of the agricultural products of your county and State to the industrial development of the same. Compare your own State in this respect with other States and countries having similar agricultural products. If there is a difference in the industrial development in any of the cases noted let it be accounted for.

ARITHMETIC.

Problems on the value of selecting and testing seeds of the various crops should be developed for this month. Let the exercises involve the value of time spent in selecting and testing, the time spent in replanting, and the effect of untested seed on the stand and the ultimate yields. Let these exercises as nearly as possible be based on data gathered from the community. These processes may be multiplied to meet the needs of the different classes in the subject of arithmetic. Problems on the cost of spraying materials, the time spent in spraying, and the increased yield should be developed. Comparison should be made of the yields of sprayed and unsprayed trees, and problems developed on these as a basis. The value of sprays in prolonging the lives of plants should be estimated.

FIG. 6.—Practice in pruning.

Useful publications to be used in connection with this work are: Bureau of Entomology Circular No. 42, How to Control San José Scale; and Farmers' Bulletin 243, Fungicides and Their Use in Preventing Diseases of Fruits.

EXCURSIONS AND PRACTICAL WORK.

Excursions should be made this month to orchards for the purpose of observing methods in spraying and for practice in the use of spraying mixtures and devices. Excursions should also be made for the purpose of observing pruning and for practice in the same.

Practical work in testing seeds, both in the school and the home, should be engaged in. The actual work at school should be confined largely to school-garden seeds and those to be used by the club members in their contest plats.

MARCH.

LANGUAGE LESSONS.

Reports of field observations, compositions on the value of clubs to the members, the schools, and the community, and the influence of clubs on increased production and on home economy. Letters of correspondence between club members of different schools. Record of practical work. Debate: The Boll Weevil is a Blessing in Disguise.

READING AND SPELLING.

The following are suggested for supplementary correlation reading: Farmers' Bulletins 205, Pig Management; 229, Production of Good Seed Corn; 241, Butter Making on the Farm; 287, Poultry Management; 408, School Exercises in Plant Production; 417, Rice Culture; and 533, Good Seed Potatoes and How to Bed Them.

List and assign new words for spelling exercises.

DRAWING.

Have each pupil prepare a drawing of his home farm, locating buildings, yards, barn lots, permanent pasture, orchards, streams, springs, woodland, roadways around or through the farm, crops as planned for the year, the prize acres and plats, etc. After an accurate outline has been drawn the map can be made attractive by filling in with seed, fiber, pictures of fruit, stock, farm implements, flowers, and houses at proper places on the map. On farms where a system of rotation is followed a set of maps should be drawn representing the location of the crops for each year of the course.

HISTORY.

Study the history of the agricultural-club movement in your State and in other States. Collect and study data as to records of prize winners, methods employed by them, and value of prizes and advertising received by the winners. Study the systems of judging yields employed in your State and other States.

GEOGRAPHY.

Prepare a map of the United States and indicate the States in which there has been club activity, the kinds of clubs, and prepare a statement in this connection showing the influence of the club movement on the school and farm work of each State. Also study the influence of clubs on increased production, crop marketing, home life, and health.

ARITHMETIC.

Develop problems on the cost of farm fencing. Special attention should be given to the cost of constructing temporary hog and poultry fences. Exercises in this phase of the work should be developed for the benefit of the club members. Problems relating to the cost and value of grazing crops for hogs and poultry should be developed.

EXCURSIONS AND PRACTICAL WORK.

The time that can be devoted to excursions should be spent in visiting the different club members' patches for the purpose of observing the methods and thoroughness of preparation.

Practical work for this month should consist in preparing plats and patches for planting the contest crops.

APRIL.

LANGUAGE LESSONS.

Reports of field observations. Compositions on methods of growing given crops, such as corn, potatoes, and tomatoes. The following points should be covered in each composition: Preparation of soil, fertilization, cultivation, and harvesting. Write letters to the State extension agent asking advice and information as to matters pertaining to your club work. Make a record of practical work. Debate: "The corn-club movement" has done more to increase the yield of corn in the State during the last five years than any other one influence.

READING AND SPELLING.

For correlation reading the following are suggested: Farmers' Bulletins Nos. 54, Some Common Birds; 220, Tomatoes; 372, Soy Beans; 414, Corn Cultivation; 431, The Peanut; 458, The Best Two Sweet Sorghums for Forage; 459, House Fly; and 509, Forage Crops for the Cotton Regions.

The usual method of listing and assigning words should be employed.

DRAWING.

During the months of April and May the pupils of this group should spend the time to be devoted to drawing in gathering data and preparing a map of the school township or district, showing the location of all public enterprises that touch upon farm life. These will include the following: Principal and neighborhood roads, telephone line, rural carriers' routes, church buildings, school buildings, railroads, railway stations, sidetracks, community markets, if any, streams, mills, gins, etc. This map should be so complete that it will show all the advantages and disadvantages of the township or school district. Complete this map by locating the homes of the boys and girls who belong to the clubs and have contest plats.

HISTORY.

During the months of April and May, or the closing month of the school, special attention should be given to the study of the histories of crops or breeds of animals to be grown by the club members, laying special emphasis on the degree of success with which each has been produced and the conditions that have obtained in connection therewith. It will be especially important to study the methods of preparing seed beds, of fertilizing, of planting, and of cultivating that have been employed in the past, to determine with what success these methods have been employed and to what extent they should be used by the club members. This study should be extended to methods of feeding poultry and swine, noting especially the success of the different methods and the conditions that obtained in each case.

GEOGRAPHY.

Prepare a map of the State, indicating thereon by distinguishing marks the different classes of schools teaching agricultural sciences. Continue this study to the Nation and to other countries and determine as nearly as possible the effect that such institutions have had on agricultural advancement and how agricultural conditions have affected the work of the schools.

ARITHMETIC.

Develop problems on crop rotation, estimating the value of the same in soil improvement and in saving in the cost of fertilizers. Plan rotations especially adapted to the needs of the corn and pig club members, based on proper rotation principles, and at the same time providing feed and grazing for hogs. Develop exercises based on the foregoing for work in the arithmetic classes.

EXCURSIONS AND PRACTICAL WORK.

Visits should be made to places in the community affording opportunities for the studying of hotbeds, cold frames, and their structure and use.

The months of April and May should be devoted to planting contest crops and germinating plants for the purpose of transplanting later.

MAY.

LANGUAGE LESSONS.

The closing days of school are generally used preparing exercises for the final public entertainments. These exercises should be full of the subject of agriculture. Let all the selections rendered touch upon some phase of agriculture. This will be an opportunity for the teacher to show in a public way what the school can do for the community in connection with its most important enterprise.

READING AND SPELLING.

The following are suggested for correlation reading: Farmers' Bulletins Nos. 132, Insect Enemies of Growing Wheat; 426, Canning Peaches on the Farm; 447, Bees; and 521, Canning Tomatoes in the Home and in Club Work.

The same plan with regard to the spelling exercises should be followed as in other months.

DRAWING AND HISTORY.

Same as in April.

GEOGRAPHY.

Study birds of the State with regard to habits of migration. Compare those that migrate and those that do not as to their agricultural economy. Study insects and fungus diseases of the State as to kinds, localities infested, and the influence they have on the kinds and yields of crops.

ARITHMETIC.

Develop problems on cost of terracing, estimated saving of terraces, cost of open ditches, cost of blind ditches, and problems involving the relative values of blind and open ditches with reference to original cost, saving in cultivatable ground, time in cultivation, keeping open ditch clear of weeds, etc. Multiply problems on the economy of birds in destroying weed seeds, insects, and insect eggs. (See Yearbook Reprint No. 443, Does it Pay Farmers to Protect Birds? Also Farmers' Bulletin No. 187, Drainage of Farm Land.)

CORRELATION SUPPLEMENTS.

REFERENCES.

Let each school provide itself with the publications of the Department of Agriculture mentioned in this scheme and arrange them according to subjects in a permanent place in the school building. These publications may be had as long as the supply lasts by applying to the Department of Agriculture, Washington, D. C.

Each school should write to the State college of agriculture asking that its name be listed to receive such matter printed by the college and the experiment station connected with it as is of value in the school work.

Have the pupils bring from home the farm papers that have been read there.

Group your publications after some convenient plan and form the habit of using them in connection with your work.

Almost unlimited reference material may be had free. Use a few postal cards and command this material. Create an agricultural atmosphere in the school, thereby making it a real center of activity in the community.

Agricultural colleges in the Southern States:

Alabama Polytechnic Institute, Auburn, Ala.
College of Agriculture of the University of Arkansas, Fayetteville, Ark.
College of Agriculture of the University of Florida, Gainesville, Fla.
Georgia State College of Agriculture, Athens, Ga.
State University and College of Agriculture, Lexington, Ky.
Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.
Maryland Agricultural College, College Park, Md.
Mississippi Agricultural and Mechanical College, Agricultural College, Miss.
The North Carolina College of Agriculture and Mechanic Arts, West Raleigh, N. C.
Oklahoma Agricultural and Mechanical College, Stillwater, Okla.
The Clemson Agricultural College of South Carolina, Clemson College, S. C.
College of Agriculture, University of Tennessee, Knoxville, Tenn.
Agricultural and Mechanical College of Texas, College Station, Tex.
Virginia Polytechnic Institute, Blacksburg, Va.
West Virginia University and Agricultural and Mechanical College, Morgantown, W. Va.

SEED SELECTING.

As soon as possible after the opening of school in the fall trips to to club patches and near-by fields should be made and typical plants located, from which seeds are to be selected later. Plants should be selected that have made the best showing as to symmetrical growth and number and quality of seed under average conditions. For instance, do not be misled by an attractive, symmetrical, highly productive specimen that happens to have unusual distance or stands on an unusually fertile spot. Select the plant that has outstripped its neighbors in the before-mentioned characteristics under average conditions.

Let these individuals be marked in some way so that they may be located readily when seeds have matured.

Later in the season, after the seeds have matured and in advance of general harvesting, go back to the fields or plats and select the choice specimens of seed from stalks previously marked.

Such seed should be stored in a dry, cool place to await germinating and vitality tests.[1]

[1] See U. S. Dept. Agr., Bu. Plant Indus. Doc. 485, The Selection of Cotton and Corn Seed for Southern Farms.

SEED STORING.

Care should be exercised in storing seed that its vitality may be preserved. Extremes in temperature, excessive moisture, and attacks of rodents, insects, etc., should be provided against. If the farm buildings are not equipped with a room especially prepared for storing seed, racks should be used, which may be suspended from points inaccessible to small animals. To prevent insect injury, grains especially should be fumigated with bisulphid of carbon. Seeds that are likely to be affected with fungus diseases should be treated with a formalin solution before planting.[1]

SEED TESTING.

The work in testing garden and field-crop seeds should prove one of the most interesting, as well as one of the most valuable exercises

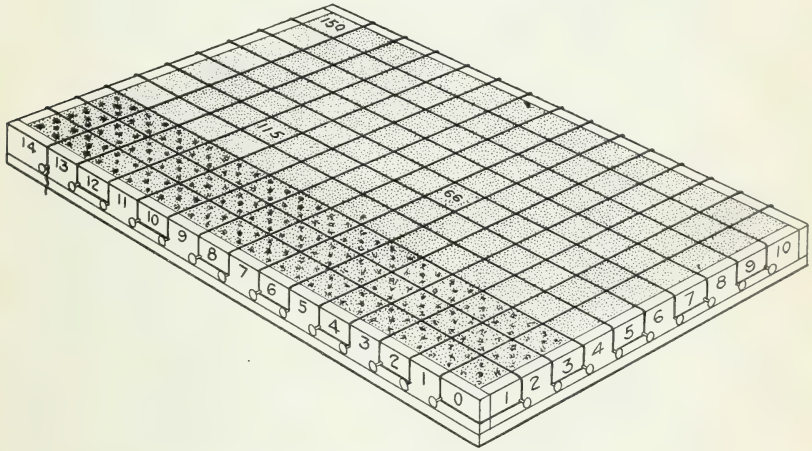

FIG. 7.—Sand tray for testing seed corn.

that the club members and the schools can engage in. No special skill is required.

The accompanying seed-testing device (fig. 7) will suggest the principal equipment.[2]

The value of seed testing in securing regular stands of healthy, vigorous plants can not be overestimated.

PLANS FOR SCHOOL GARDENS.

The plan for the school garden will depend upon a number of things, among them being the land available, the number of pupils, and the size of the individual plats. In the event that the school

[1] See U. S. Dept. Agr. Farmers' Buls. 243 and 544.

[2] Special attention is called to U. S. Dept. Agr. Farmers' Bul. 428, Testing Seed in the Home and in the School.

grounds do not supply a sufficient amount of land arrangements should be made to secure a plat adjacent to the school.

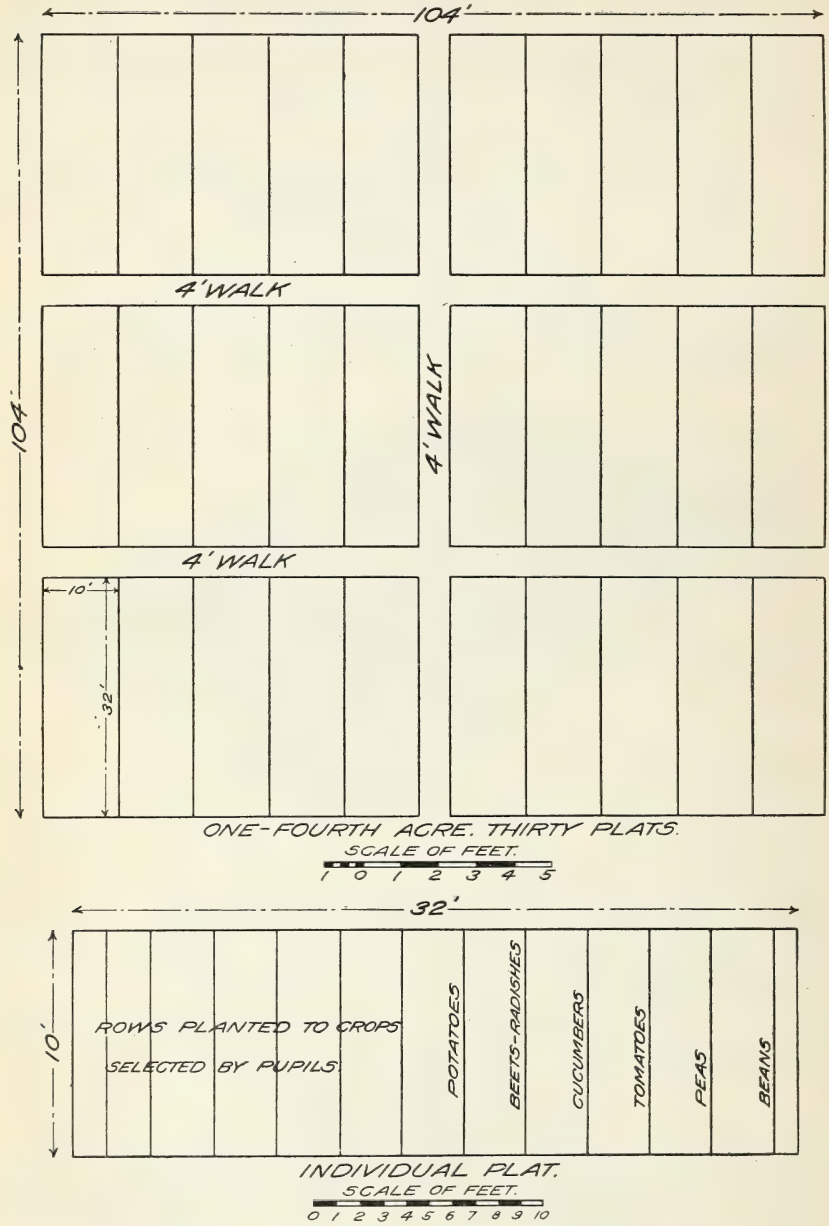

FIG. 8.—Suggestive plan for a school garden and an individual plat.

The mistake of making the individual plats too large should not be made. Just sufficient area should be assigned to enable the pupil

to give it proper attention. Careful, thoughtful work should be insisted upon rather than quantity.

Demonstration plats for the supervision of the teacher should be set apart. These plats should be used to demonstrate certain truths with regard to individual crops. The farmers of the community should be encouraged to take an interest in this phase of the work for their own benefit.

The preceding school-garden plan (fig. 8) should prove suggestive to the teacher in laying out grounds.

SCHOOL EXHIBITS.

Every school should have its fair or its exhibit day. There are many reasons for this. In the first place, such an enterprise is local

FIG. 9.—Marion County, Tex., Girls' Club exhibit.

in character, and it is possible for every pupil to participate. Looking forward to an exhibit of products and work will prove quite an incentive to the pupil to do his or her best in the garden, plat, or other work. The interest thus awakened among pupils will react on the community and attract its attention to the school. It will be necessary to offer prizes for the best exhibits, and in soliciting the articles for this purpose the attention of beneficent and enterprising people will be called to the progressive spirit of the school and its importance magnified. In turn, the recognition given the school by patrons and others will prove encouraging to the pupils and will be conducive to better results in their work.

Aside from the benefits of an inspirational character the pupils will be rewarded with better yields and in some instances with prizes of intrinsic value.

As a means of raising funds for school improvement the prize-winning exhibits should be sold at auction.

The exhibits (fig. 9), excepting live stock, can be displayed either within or without the school building. Seats and simple contrivances may be employed for the display. Nothing appears to better advantage than agricultural or home-economic products. The exercise of a little taste in the arrangement will produce surprising results.

Finally, the school fair will provide a means of collecting and preparing material for the district or county fair, if such is conducted.

SCORE CARDS.

SCORE CARD FOR LARD HOGS.

Breed..... Name..... Register No. .....

	Perfect score.	Student's score.	Corrected score.
General appearance, 36:			
Weight, score according to age	6		
Form, deep, broad, low, long, symmetrical, compact, standing squarely on legs	10		
Quality, hair silky; skin fine; bone fine; flesh smooth, mellow, and free from lumps or wrinkles	10		
Condition, deep, even covering of flesh, especially in regions of valuable cuts	10		
Head and neck, 6:			
Snout, medium length, not coarse	1		
Eyes, full, mild, bright	1		
Face, short, cheeks full	1		
Ears, fine, medium size, soft	1		
Jowl, strong, neat, broad	1		
Neck, thick, medium length	1		
Fore quarters, 10:			
Shoulders, broad, deep, full, compact on top	6		
Breast, advanced, wide	2		
Legs, straight, short, strong; bone clean; pasterns upright; feet medium size	2		
Body, 30:			
Chest, deep, broad, large girth	2		
Sides, deep, lengthy, full; ribs close and well sprung	6		
Back, broad, straight, thickly and evenly fleshed	10		
Loin, wide, thick, straight	10		
Belly, straight, even	2		
Hind quarters, 18:			
Hips, wide apart, smooth	2		
Rump, long, wide, evenly fleshed, straight	2		
Ham, heavily fleshed, plump, full, deep, wide	10		
Thighs, fleshed close to hocks	2		
Legs, straight, short, strong; bone clean; pasterns upright; feet medium size	2		
Total	100		

Remarks.....

Name of pupil..... Date..... .....

SCORE CARD FOR BACON HOGS.

Breed ..... Name ..... Register No. .....

	Perfect score.	Student's score.	Corrected score.
General appearance, 36:			
Weight, 170 to 200 pounds, largely the result of thick covering of firm flesh	6		
Form, long, level, smooth, deep	10		
Quality, hair fine, skin thin; bone fine; firm, even covering of flesh without any soft bunches of fat or wrinkles	10		
Condition, deep, uniform covering of flesh, especially in regions of valuable cuts	10		
Head and neck, 6:			
Snout, fine	1		
Eyes, full, mild, bright	1		
Face, slim	1		
Ears, thin, medium size	1		
Jowl, light, trim	1		
Neck, medium length, light	1		
Fore quarters, 10:			
Shoulders, free from roughness, smooth, compact, and same width as back and hind quarters	6		
Breast, moderately wide, full	2		
Legs, straight, short, strong; bone clean; pasterns upright, short; feet medium size	2		
Body, 34:			
Chest, deep, full girth	4		
Back, medium and uniform in width, smooth, slightly arched	8		
Sides, long, smooth, level from beginning of shoulders, to end of hind quarters. The side at all points should touch a straight edge running from fore to hind quarter	10		
Ribs, deep	2		
Belly, trim, firm, thick without any flabbiness or shrinkage at flank	10		
Hind quarters, 14:			
Hips, smooth, wide; proportionate to rest of body	2		
Rump, long, even, straight, rounded toward tail	2		
Gammon, firm, rounded, tapering, fleshed deep, and low toward hocks	8		
Legs, straight, short, strong, feet medium size; bone clean; pasterns upright	2		
Total	100		

Remarks .....

Name of pupil ..... Date .....

SCORE CARD FOR COTTON PLANT.

Class..... Variety.....

The cotton plant.	Perfect score.	Student's score.	Corrected score.
Plant, vigorous, stocky, 25 points:			
Size	5		
Form, symmetrical, spreading, conical	5		
Stalk, minimum amount of wood in proportion to fruit	5		
Branches, springing from base, strong, vigorous, in pairs, short jointed, inclined upward	5		
Head, well branched and filled, fruited uniformly	5		
Fruiting, 24 points:			
Bolls, large, uniformly developed, plump, sound, firm	4		
Number of bolls, according to variety	4		
Bolls per pound of seed cotton, large, 40–60; medium, 60–75; small, 80–110.	4		
Character of bolls, number of locks 4 to 7; kinds of sepals; retention of cotton	6		
Opening of bolls, uniform including top crop, classify as good, medium, poor	6		
Yield—Standard 1 bale per acre, 30 points:			
Seed cotton, estimated by average plant, distance of planting, per cent of stand, plants per acre; thin uplands, 10,000; fertile uplands, 6,500; "bottoms," 4,500; distance of plants, $3\frac{1}{2}$ by $1\frac{1}{4}$ feet, $4\frac{1}{2}$ by $1\frac{1}{2}$ feet, $4\frac{1}{2}$ by 2 feet, respectively	12		
Per cent of lint, not less than 30, standard 40	12		
Seeds, 30–50 per boll, large, plump, easily delinted; color, according to variety; germination not less than 95 per cent	6		
Quality and character of lint, 21 points:			
Strength, tensile strain good, even throughout length	5		
Length, long, according to local standard; upland, $\frac{7}{8}$ to 1 inch; intermediate, $1\frac{1}{4}$ to $\frac{1}{16}$ inches; long staple, $1\frac{1}{2}$ to 2 inches	5		
Fineness, fibers soft, silky and pliable, responsive to touch	5		
Uniformity, all fibers of equal length, strength, fineness	5		
Purity, color dead white; fiber free from stain, dirt, and trash	1		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR CORN.

Class..... Variety.....

STANDARD.

Stalks per acre..... Ears per stalk.....

Weight of ears.....pounds. Yield per acre.....bushels.

Length.....inches. Grain.....

Ear: Color:

Circumference.....inches. Cob.....

	Standard.	Student's score.	Corrected score.
Uniformity:			
a. Uniformity of exhibit }	10		
b. Trueness to type }			
Shape of ear, cylindrical	10		
Weight, according to standard	10		
Length, according to standard	5		
Circumference, according to standard	5		
Market condition and quality, sound and bright	20		
Color, no discolored grains	5		
Tips, covered over end	10		
Butts, filled out, rows straight	5		
Space between rows, very little	5		
Uniformity and shape of kernels	10		
Per cent of grain, estimated.....Found.....	5		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR POTATOES.

Variety..... Spring or fall crop.....

	Perfect score.	Student's score.	Corrected score.
Size (not overlarge nor undersized)	20		
Shape (true to type of variety, whether round, cylindrical, or kidney shaped)	10		
Color	10		
Skin	5		
Flesh	5		
Surface (should be smooth)	20		
Eyes	20		
Number (not less than 8 nor more than 12)	5		
Distribution (not too close together, some eyes on each quarter)	5		
Depth (not too deeply indented nor raised above surface)	10		
Freedom from blemish (scab, rot, or insect injury)	20		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR BUTTER.

Breed of animal..... Name..... Registration No.....

	Perfect score.	Student's score.	Corrected score.	
Flavor	45			Metallic. Curdy. Fishy. Feverish. Oily. Weedy. Stable. Unclean. High acid. Low acid.
Texture	25			Poor grain. Weak body. Cloudy brine. Too much brine. Cheesy. Greasy. Tallowy. Mottles.
Color	15			White specks. Too high. Too light. Streaky.
Salt	10			Too much salt. Poor salt. Lacks salt. Gritty.
Condition of package	5			Dirty. Poorly packed. Poorly nailed. Poorly lined.
Total	100			

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR JELLIES.

Kind of fruit.....

	Perfect score.	Student's score.	Corrected score.
Quality:			
Consistency—			
Solidification	25		
Firmness	15		
Taste—			
Tartness	10		
Flavor	10		
Appearance:			
Clearness	25		
Color	10		
Package—			
Production	3		
Condition	2		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR FRUIT AND VEGETABLES.

Kind of fruit or vegetable..... Variety.....

	Perfect score.	Student's score.	Corrected score.
Taste:			
Tartness	15		
Flavor	15		
Appearance:			
Uniformity—			
Shape	15		
Size	15		
Color	20		
Arrangement	15		
Package:			
Production	3		
Condition	2		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR BREAD.

Kind.....

	Perfect score.	Student's score.	Corrected score.
Outside:			
Color—			
Shade	4		
Evenness	3		
Surface	6		
Shape	7		
Inside:			
Thoroughness of baking	20		
Appearance of crumb—			
Texture—			
Quality	8		
Fineness	4		
Evenness	3		
Color	5		
Taste—			
Sweetness	25		
Flavor	15		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR TOMATO PLANT.

Variety.....

	Perfect score.	Student's score.	Corrected score.
Form	10		
Vigor	25		
Foliage	10		
Product (quantity and quality)	35		
Disease (plant and product)	20		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR TOMATOES—PLATE.

Variety.....

	Perfect score.	Student's score.	Corrected score.
Shape (should be ideal for variety)	15		
Blow or blossom end (small scar or smooth)	10		
Stem end (small, slight depression)	10		
Color (uniform and ideal for variety)	15		
Flesh (solidity)	10		
Flesh (uniform color)	10		
Even ripening for individual fruits	15		
Uniformity of sample	15		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR APPLES—BARREL PACK.

Variety .....

	Perfect score.	Student's score.	Corrected score.
Uniformity of size	20		
Uniformity of color	20		
Uniformity of shape	10		
Condition and freedom from blemishes	20		
Attractiveness, including facing and tailing	15		
Barrel, and trimmings	5		
Firmness of pack	10		
Total	100		

Remarks .....

Name of pupil ..... Date .....

SCORE CARD FOR APPLES—PLATE.

Variety .....

	Perfect score.	Student's score.	Corrected score.
Size (Normal: Neither too large nor too small)	10		
Color, typical	25		
Freedom from blemish	20		
Texture and flavor	20		
Uniformity and trueness to type	25		
Total	100		

Remarks .....

Name of pupil ..... Date .....

SUGGESTED PROBLEMS IN ARITHMETIC.

SEPTEMBER.

1. Provide the school with several rod ($16\frac{1}{2}$-foot) poles marked off in foot and yard lengths. These should be made by the pupils.

2. With a pole, measure the school yard and find the area.

3. With a pole, measure club members' plats and find the areas.

4. With a pole, measure two areas a rod square in each boy's plat, count the stalks in each area, find the average number in each, and estimate the number of stalks in each boy's plat.

5. Count the ears, bolls, etc., on each area, find the average number on each area, and estimate the number on the entire plat. Estimate the yield and the value of the yield.

6. Prepare a bill of lumber for a hog house 6 by 36 feet, allowing for five partitions. The outside walls are 4 feet high and the summit of the roof 6 feet high. Find the cost of material at local prices.

OCTOBER.

1. A bushel measure for gauging corn is 12 by 12 by 27 inches. Find its volume in cubic inches. In cubic feet.

2. How many bushels of corn in a wagon box 10 feet long, 3 feet wide, and $2\frac{1}{4}$ feet deep?

3. How many cubic feet in a bin of sufficient capacity to contain the yield of a boy's acre that makes 156 bushels?

4. Find the profit made on a tenth of an acre of tomatoes when the land rent is $1, labor $3, staking and pruning $2, fertilizer $2.50, cans $36, canner $5, cost of canning $10, and the output 1,200 cans, at 8 cents per can.

5. Find the per cent profit in problem 4.

NOVEMBER.

1. What will it cost per acre to set an apple orchard if young trees cost 25 cents apiece and are planted in squares 36 feet apart?

2. If it requires 15 bushels of corn, at 50 cents a bushel, and $5 worth of other feed to raise a pig to be 9 months old, what is the cost of the pig to the boy?

3. If a scrub pig nets 150 pounds and is sold at 8 cents per pound when 9 months old, will there be a net profit or loss?

4. If a pure-bred pig nets 250 pounds when 9 months old and is sold at 8 cents per pound, is there a profit or loss?

5. A poultry club girl has a flock of 15 hens. Each hen averages 96 eggs per year. What is the value of all the eggs at 15 cents per dozen?

6. She feeds her flock of hens during the year 3 bushels of corn at 50 cents a bushel, 1 bushel of oats at 50 cents a bushel, and $2 worth of other feed. What is her profit?

7. The second year she improves her stock, and each hen averages 120 eggs. What is her profit?

DECEMBER.

1. A farmer owns 12 cows that average 22 pounds of milk each daily. How many pounds does his herd produce in a year?

2. If the milk of the above herd tests 4 per cent butter fat, what is the value of the year's production at 25 cents per pound butter fat?

3. If by changing the nutritive ratio of the feed the above-mentioned farmer increases the production of each cow 2 pounds per day without additional cost, what will be his increased receipts? What will be the per cent increase?

4. Each cow of a Holstein herd averages 30 pounds of milk daily, each cow of a Jersey herd 20 pounds, and each cow of a scrub herd 15 pounds. The Holstein milk tests $3\frac{1}{2}$ per cent butter fat, the Jersey 5 per cent, and the scrub $3\frac{1}{4}$ per cent. Find the value of the average daily production of butter fat of each cow at 25 cents per pound.

JANUARY.

1. A fertilizer formula sets forth the available essential elements—namely, phosphoric acid, ammonia, and potash—that the particular brand contains. For example, a 10:2:2 formula means 10 per cent phosphoric acid, 2 per cent ammonia, and 2 per cent potash. Find the number of pounds of each element in a ton (2,000 pounds) of 10:2:2 goods.

2. If phosphoric acid is worth 4 cents per pound, ammonia 15 cents per pound, and potash 5 cents per pound, find the cost of the fertilizing elements in a 10:2:2 goods.

3. If a ton of 10:2:3 goods cost $24 in market, what would be the value of a man's time (5 hours) who compounds his own fertilizer by the same formula when the elements cost the same as in problem 2?

4. Acid phosphate usually found on the market contains 14 and 16 per cent phosphoric acid; kainit usually contains 12 per cent potash; muriate of potash contains 50 per cent potash; nitrate of soda contains 16 per cent nitrogen, or approximately $19\frac{1}{2}$ per cent ammonia; cottonseed meal usually contains 2 per cent phosphoric acid, 7 per cent ammonia, and $1\frac{1}{2}$ per cent potash.

5. Find the value of the elements in a ton of cottonseed meal at the prices mentioned in problem 2.

6. Find the amounts of 16 per cent phosphate, 19½ per cent nitrate of soda, and 12 per cent kainit required to compound a ton of 9:2:4 goods. What amount of filler will be required to complete the ton?

7. Find the amounts of 14 per cent phosphate, 2:7:1½ cottonseed meal, and 50 per cent muriate of potash required to make a ton of 8:3:3 goods.

FEBRUARY.

1. Spraying materials usually cost as follows: Lime, 1 cent per pound; copper sulphate, 10 cents per pound; Paris green, 30 cents per pound; arsenate of lead, 15 cents per pound; kerosene, 13 cents a gallon; hard soap, 10 cents per pound; lime-sulphur mixture, 15 cents per gallon.

2. Find the cost of the following formula:

5 pounds lime.....
5 pounds copper sulphate.....
50 gallons water.....
Total.....

3. Find the cost of the following formula:

2 gallons kerosene.....
1 pound hard soap.....
1 gallon water.....
Total.....

4. Find the cost of the following formula:

3 pounds arsenate of lead.....
50 gallons water.....
Total.....

5. If it takes three applications of 2 pounds of arsenate of lead and three days' time, at $1.25 per day, to destroy the Colorado beetles on an acre of potatoes, how many bushels of potatoes, at 50 cents per bushel, will be required to pay for the treatments?

6. A boy failed to select and test the vitality of his seed corn and secured only three-fourths of a regular stand. His yield was 60 bushels. What should it have been if his stand had been regular?

7. If two days had been required to select and test the corn seed in problem 6 and thereby secure a regular stand, what would have been the value of the boy's time per day?

MARCH.

1. For the school garden plats 15 girls want 10 tomato plants each, and the plants should stand 1½ inches each way, what should be the area of the cold frame?

2. Determine the cost of such a frame.

3. What would be each girl's share of the cost?

4. A boy who is a member of both corn and pig clubs follows a 3-year rotation course with 3 acres of land. To utilize his grazing crop each year it is necessary for him to have a portable hog fence of sufficient length to inclose an acre. If it requires 60 rods of fence at 35 cents per rod and 80 posts at 10 cents apiece to construct the fence, what will be the cost of material?

5. If the above boy's temporary pea pasture will support a sow and six pigs, what will each of the pigs have to bring at 10 weeks old to pay for his temporary fence?

APRIL.

1. In a 3-year rotation course of corn, cotton, and oats and peas, one-fourth ton of stubble and one-fourth ton of pea vines are turned under. What is the fertilizing value if 1 ton of pea vine provides 40 pounds nitrogen, 10 pounds phosphoric acid,

and 40 pounds potash; and 1 ton of stubble provides 10 pounds nitrogen, 4 pounds phosphoric acid, and 20 pounds potash?

2. A farmer plants an acre to cotton three years in succession, using 400 pounds of fertilizer each year. The first year the acre produces a bale, the second year five-sixths of a bale, and the third year two-thirds of a bale. What is the income for the three years if cotton sells at 12 cents a pound and seed at $20 a ton? (A bale of lint weighs 500 pounds. The seed of a bale 800 pounds.)

3. The same farmer plants another acre, using the same amount of fertilizer each year, to cotton the first year and makes a bale, to corn and peas the second year and produces 75 bushels of corn and 10 bushels of peas, to oats and peas the third year and produces 40 bushels of oats and 15 bushels of peas. Find the value of all the crops if corn is worth 75 cents per bushel, cotton the same as in problem 2, peas $1.50 a bushel, and oats 50 cents per bushel.

4. Find the fertilizer value of one-fourth ton of oat stubble and one-half ton pea vines turned under during the three years in problem 3.

5. Find the total values in problems 3 and 4 and compare with 2.

6. Will the method followed in problem 2 or that in problem 3 furnish more humus? Which method will leave the soil in better physical condition?

MAY.

1. Field tiling costs about as follows: Three-inch, 3 cents per foot; 4-inch, 4 cents per foot; 5-inch, 5 cents per foot; and 6-inch, 6 cents per foot. Find cost of 500 feet of each?

2. A man owns a plat of swamp land 48 rods long and 10 rods wide. Find its area in acres.

3. There is a small stream running through the middle of the plat lengthwise. To drain the plat into the stream it requires 4-inch tiling laid 2 feet deep every 4 rods. Find cost of tiling to drain the plat.

4. It costs 12½ cents a rod to dig the ditches. What will the ditching cost?

5. What will the system of drainage cost in 3 and 4?

6. The plat has been producing 2 tons of hay valued at $10 per ton. How many bushels of corn per acre will the plat now have to produce the first year to pay for the drainage system and make a return equivalent to the usual income from the hay crop?

7. Fifty insects per day is a low estimate for the average bird to eat. On an 80-acre farm there is an average of 2 birds per acre. How many insects will be consumed on this farm per day? Per month?

8. If there averages 1 bird per acre, how many in your State?

9. If each bird eats one-tenth of an ounce of weed seed per day, how many pounds of weed seed would be consumed in the State in a day? In August, September, and October?

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